

# Notice of Allowability

Application No.

10/763,971

Examiner

Navin Natnithithadha

Applicant(s)

STARR ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Terminal Disclaimer and Remarks, filed on 07 August 2007.
2. ☒ The allowed claim(s) is/are 1-25.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
CHARLES A. MARMOR II  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700

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**REASONS FOR ALLOWANCE**

1. Claims 1-25 are pending.
2. The objection to claim 7 is WITHDRAWN in view of the Amendment and Remarks, p. 8, filed on 29 May 2007.
3. The rejections to claims 1-25 under the judicially created doctrine of obviousness-double patenting as being unpatentable over claims 1-25 of Starr et al, U.S. Patent No. 6,412,226 B1 and claims 1-25 of Starr et al, U.S. Patent No. 6,699,203 B2 are WITHDRAWN in view of the Terminal Disclaimer, filed on 07 August 2007, which has been approved.
4. Claims 1-25 are allowed.
5. The following is an examiner's statement of reasons for allowance:  
Claims 1-25: The closest prior art of record is Mault, US 6,517,496 B1 ("Mault"). Mault teaches a method and apparatus for determining cardiac output, comprising: a flow sensor 14 and an oxygen sensor 16 for determining end-tidal oxygen concentration and  $VO_2$  (oxygen uptake); a pulse oximeter 22 for measuring fractional arterial oxygen concentration (see col. 6, ll. 26-41); and a computing unit 20 for determining cardiac output based the equation:

$$C.O. = \frac{VO_2}{CaO_2 - CvO_2}$$

wherein  $VO_{2\text{.sub.2}}$  is measured by the airway based respiratory analyzer,  $CaO_{2\text{.sub.2}}$  and  $CvO_{2\text{.sub.2}}$  are determined according to the equations

$$CaO_{2\text{.sub.2}} = [(SaO_{2\text{.sub.2}})(Hgb)(1.36) + (PaO_{2\text{.sub.2}})(0.0031)] \text{ and} \\ CvO_{2\text{.sub.2}} = [(SvO_2)(Hgb)(1.36) + (PvO_{2\text{.sub.2}})(0.0031)],$$

respectively,

wherein  $SaO_{2\text{.sub.2}}$  is the oxygen saturation measurement obtained by pulse oximetry,  $Hgb$  is the hemoglobin concentration (which is entered as

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a known value or by direct measurement), and  $PvO_{.2}$  is obtained from the measurement of  $EtO_{.2}$ . It is assumed that  $EtO_{.2}$  approximates  $PvO_{.2}$  and, if the  $PvO_{.2}$  and the hemoglobin concentrations are known, using the oxygen dissociation curve,  $SvO_{.2}$  can be determined. The pulse oximeter 26 measures  $SaO_{.2}$  (alternatively,  $SaO_{.2}$  and  $PaO_{.2}$  can be reasonably assumed).

However, Mault does not teach repeating the measurements of a first parameter indicative of patient's oxygen uptake and a second parameter indicative of a patient's fractional arterial oxygen concentration after inducing a change in such a patient's arterial oxygen concentration (such as by rebreathing expired gas, see Applicant's disclosure, p. 10), and subsequently determining a cardiac output estimate based on the measurements of the first and second parameter before and after inducing a change in the patient's arterial oxygen concentration.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Navin Natnithithadha whose telephone number is (571) 272-4732. The examiner can normally be reached on Monday-Friday, 8:00-4:00.

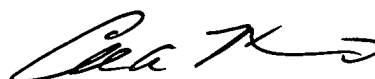
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor, II, can be reached on (571) 272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Navin Natnithithadha  
Patent Examiner  
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10/29/2007



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